

Claims

1. A process for production of sodium borohydride; said process comprising steps of:

5 (a) combining a boric acid ester, $B(OR)_3$ and sodium aluminum hydride to produce sodium borohydride and $Al(OR)_3$; and

(b) combining $Al(OR)_3$ and sulfuric acid to produce alum and ROH; wherein R represents alkyl, aryl or aralkyl.

10 2. The process of claim 1 further comprising a step of recycling ROH formed in step (b) to step (a).

3. The process of claim 2 in which in which the boric acid ester and the sodium aluminum hydride are combined in a hydrocarbon solvent.

15 4. The process of claim 3 in which R is alkyl having at least three carbon atoms, aryl or aralkyl.

5. The process of claim 4 in which R is phenyl.

20 6. A process for production of sodium borohydride; said process comprising steps of:

(a) combining a boric acid ester precursor and an aliphatic or aromatic alcohol, ROH, to produce a boric acid ester, $B(OR)_3$;

25 (b) combining sodium, aluminum and hydrogen to produce sodium aluminum hydride;

(c) combining the boric acid ester and the sodium aluminum hydride to produce sodium borohydride and $Al(OR)_3$; and

30 (d) combining $Al(OR)_3$ and sulfuric acid to produce alum and ROH; wherein R represents alkyl, aryl or aralkyl.

7. The process of claim 6 in which the boric acid ester and the sodium aluminum hydride are combined in a hydrocarbon solvent.

8. The process of claim 7 in which R is alkyl having at least three
5 carbon atoms, aryl or aralkyl.

9. The process of claim 8 in which ROH produced in step (d) is recycled to step (a).

10. The process of claim 9 in which R is phenyl.
10